

1. Aqueous sol containing silica-based particles, characterised in that it has an S-value within the range of from 10 to 45%, a viscosity within the range of from 5 to 40 cP and a molar ratio of SiO_2 to M_2O , where M is alkali metal or ammonium, within the range of from 10:1 to 40:1.

2. Aqueous sol containing silica-based particles, characterised in that it has an S-value within the range of from 10 to 45%, a viscosity within the range of from 5 to 40 cP and a silica content of at least 10% by weight.

3. Aqueous sol according to claim 1, characterised in that it has a silica content of at least 10% by weight..

4. Aqueous sol according to claim 1, 2 or 3, characterised in that the silica-based particles have a specific surface area within the range of from 775 to 1050 m^2/g .

5. Aqueous sol according to claim 1, 2 or 3, characterised in that the silica-based particles have a specific surface area within the range of from 550 to 725 m^2/g .

6. Aqueous sol according to any of claims 1 to 5, characterised in that the S-value is within the range of from 20 to 40%.

7. Aqueous sol according to any of claims 1 to 6, characterised in that the viscosity is within the range of from 7 to 25 cP.

8. Aqueous sol according to any of claims 1 to 7, characterised in that it has a molar ratio of SiO_2 to M_2O , where M is alkali metal or ammonium, within the range of from 15:1 to 30:1.

9. Aqueous sol according to any of claims 1 to 8, characterised in that it has a pH of at least 10.6.

10. Process for the production of silica-based particles, characterised in that it comprises the steps of

(a) acidifying an aqueous silicate solution to a pH of from 1 to 4 to form an acid sol,

(b) alkalising the acid sol at an SiO_2 content within the range of from 4.5 to 8% by weight to a pH of at least 7,

(c) allowing particle growth of the alkalised sol for at least 10 minutes, and then

(d) alkalising the obtained sol to a pH of at least 10.0.

11. Process for the production of silica-based particles, characterised in that it comprises the steps of

(a) acidifying an aqueous silicate solution to a pH of from 1 to 4 to form an acid sol,

(b) alkalising the acid sol at an SiO_2 content within the range of from 4.5 to 8% by weight,

(d) alkalisng the heat-treated sol to a pH of at least 10.0.

13. Process according to claim 10, 11 or 12, characterised in that the particle growth and heat-treatment according to (c) is carried out at a temperature within the range of from 35 to 95°C.

15. Process according to any of claims 10 to 14, characterised in that the alkalisation according to (d) produces a silica-based sol having a molar ratio of SiO_2 to M_2O , where M is alkali metal or ammonium, within the range of from 15:1 to 30:1 and a pH of at least 10.6.

17. Use of silica-based particles according to any of claims 1 to 9 or 16 or produced by a process according to any of claims 10 to 15 as drainage and retention aids in the production of paper.

19. Process according to claim 18, c h a r a c t e r i s e d in that the charged organic polymer is cationic starch or cationic polyacrylamide.

21. Process according to any of claims 18 to 20, characterised in that the silica-based particles are added to the suspension in an amount of from 0.005 to 0.5% by weight, calculated as SiO₂ and based on dry cellulosic fibres and optional fillers.